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work was elaborate and the chapters are well balanced. The aim of the Riksdag has apparently been accomplished. The work of editing such a publication was by no means an easy one but it has been well done.

Wm. B. Bailey.

A SIMPLE METHOD FOR FINDING THE MOVING AVERAGE.

In the *Quarterly Publications* of the American Statistical Association for December, 1915, Mr. King, of the University of Wisconsin, offers a new method for obtaining the moving average of an historical variable. His method is certainly simpler than the long direct method, and also preferable to some short-cut methods. A method, however, which is still simpler than the one put forth by Mr. King has been used by the writer in statistical work in the University of Minnesota. It involves only three operations, namely, summation, subtraction, and division, whereas the other involves four.

1. Summate the items of the variable on the adding machine, taking sub-total for each item entered, including the first. The result is seen in the adduced representation of an adding machine slip which has been elaborated into a table. The sub-totals are marked with an asterisk. They may be numbered if convenient. The figures given are the average prices of cotton for the decade 1890–1899. The wave length is here for convenience taken to include only five items of the series.

Year.	Average Annual Price of Cotton in Cents per Pound. Sub-totals Marked with an Asterisk.	Five Year Group Totals.	Moving Average or Trend.
1890	8.6		
	8.6*		
1891	7.3		
	15.9*		
1892	8.4		
	24.3*		
1893	7.5		
	31.8*		
1894	5.9		
	37.7*	37.7	7.5
1895	8.2		
	45.9*	37.3	7.5
1896	7.3		
	53.2*	37.3	7.5
1897	5.6		
	58.8*	34.5	6.9
1898	4.9		
	63.7*	31.9	6.4
1899	7.6		
	71.3*	33.6	6.7

2. To obtain the total for each successive group of five items subtraction is necessary. Obviously, the total for the group of the first five items is the fifth sub-total. The total for the second group is obtained by sub-

tracting the first sub-total from the sixth; the total for the third group by subtracting the second sub-total from the seventh; and so on as far as we desire to go. In order to facilitate the process of subtraction, the most convenient device used by the writer has been to take a strip of cardboard or stiff paper cut to a size to cover the figures *intervening* between the subtrahend and the minuend. If the spacing is regular, it is necessary simply to slide the strip past one sub-total for each subtraction performed. The rectangle enclosing all the items between the first and sixth sub-totals indicates the use of the card for the first subtraction. With a little practice this subtraction can be done very rapidly. If the superior position of the subtrahend causes trouble, this may be avoided by leaving an extra space or two below each sub-total where the subtrahend may be written in, what is to the ordinary person, its conventional position.

3. To obtain the average, divide each group total by the number of items in the wave-length, in this case by five. The results are all shown on the slip, both the group-totals and group-averages being shown, the latter furthest to the right.

It is believed there is an advantage in thus placing the results of all three operations on the slip. For most purposes of publication or demonstration, the figures cannot be entered directly on the tables by the adding machine. From the slip they may be easily transposed. The slip may easily be made into table form if desired.

It is, of course, to be remembered that the average logically belongs not opposite the last item in the wave-length, but opposite the middle. But if students understand the meaning of the moving average, they will not meet with difficulty on this account.

It is very easy to verify the results. Simply summate the items of the last wave-length. If this sum is the same as the last group-total, the results are correct, except for the extreme improbability of compensating errors. If it is deemed necessary to verify the averages obtained by division, this may be done by summating the averages and the group-totals and dividing the sum of the group-totals by the number of items in the wave-length. The quotient should very closely approximate the sum of the averages.

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NOTE ON THE MOVING AVERAGE.*

I have been interested in reading the paper entitled "New Method for Computing the Moving Average," by Mr. Willford I. King, published in the December number of the QUARTERLY PUBLICATIONS of the American Statistical Association.

Mr. King proposes, by means of the adding machine, to add the yearly items, taking a sub-total after each item, to practically repeat the process,

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* A similar note has been received from W. M. Persons, suggesting this improvement in the Method of Computing the Average.—ED.